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Abstract

A dual pumping element fluid system for an engine or other system which reduces the driving power consumption by unloading one pumping element through the use of recirculation when a fluid pressure target value is achieved. A cross-over port fluid system prevents cavitation of the unloaded pump. A pressure-activated flow control valve mechanism is utilized to open and close the passageways from the secondary pump. The fluid system works in conjunction with an engine balance shaft system to control gear rattle at low speeds without adding undue gear loads at high speeds.